

# CURRICULUM VITAE

## Jungil LEE

**Home Address** : 7425 Brookdale Dr. 111, Darien, IL 60561, USA  
**Date of Birth** : October 13, 1964  
**Place of Birth** : Seoul, Korea  
**Citizenship** : Korean  
**Current position** : Assistant Physicist, Argonne National Laboratory  
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**Marital Status** : Married, two children

### **Education :**

- **B.S.**, Physics, Seoul National University, Korea; February 1988.
- **M.S.**, Physics, Seoul National University, Korea; February 1990.
- **Ph.D.**, Physics, Seoul National University, Korea; August 1996  
under the supervision of Professor Hee Sung Song.

### **Awards/Fellowships granted :**

- Alexander von Humboldt research Fellow  
sponsor : Alexander von Humboldt Foundation, Germany (1999).
- KOSEF Fellow  
sponsor : Korea Science and Engineering Foundation (1998).
- Korea Research Foundation Fellow  
sponsor : Korea Research Foundation (1997).
- The prize for the prominent Ph.D. Thesis  
from College of Science, Seoul National University (1996).
- Fellowship for the promising Ph.D. candidate  
from Korea Research Foundation (1993).

## **Research Experience :**

- *August 27, 2001 - : High Energy Physics Division, Argonne National Laboratory*  
Assistant Physicist.
- *June 2001- August 2001 : High Energy Physics Group, Ohio State University, U.S.A.*  
Visiting Scholar hosted by Prof. Eric Braaten.
- *November 2000- May 2001 : Theory Group, Deutsches Elektronen Synchrotron DESY, Hamburg, Germany.*  
DESY Fellow.
- *January 1999- September 2000 : II Institute of Theoretical Physics, University of Hamburg, Germany.*  
Alexander von Humboldt Research Fellow.
- *December 1997-December 1998 : Department of Physics, Ohio State University, U.S.A.*  
Postdoc supervised by Prof. Eric Braaten.
- *September 1996-December 1997 : Center for Theoretical Physics, Seoul National University.*  
Postdoc supported by Korean Ministry of Education.

## **Teaching Experience :**

- *September 1994-August 1996 : Department of Physics, Seoul National University.*  
Proctor (supervised all the TA's of Physics Department and all the general physics courses)
- *July 1992-March 1994 : Department of Physics, Seoul City University, Seoul, Korea.*  
Proctor (supervised all the general physics experiment courses)

## **Conferences attended/talks :**

### **at Argonne**

- *May 24-28, 2002 : The Meeting of The Division of Particles and Fields of The American Physical Society (DPF2002), College of William and Mary, Williamsburg, Virginia, U.S.A.,*  
Talked on " Quarkonium physics in the light bottom squark scenario ".
- *May 24-28, 2002 : The Meeting of The Division of Particles and Fields of The American Physical Society (DPF2002), College of William and Mary, Williamsburg, Virginia, U.S.A.,*  
Talked on " Relativistic corrections to gluon fragmentation into  $J/\psi$  ".
- *May 21, 2002 : High Energy Physics Lunch Seminar , Arogonne National Lab.*  
Talked on " Relativistic corrections to gluon fragmentation into  $J/\psi$  ";  
Talked on " Quarkonium physics in the light bottom squark scenario ".

- April 30- May 4, 2002 : X International Workshop on Deep Inelastic Scattering (DIS2002), Institute of Nuclear Physics, Cracow, Poland,  
Talk on " Polarization of Prompt  $J/\psi$  and  $\Upsilon(nS)$  ".
- March 19, 2002 : Purdue University, West Lafayette, Indiana  
Invited Talk on " The polarization of prompt  $J/\psi$  at the Tevatron and theoretical problems".
- October 15, 2001 : HEP Theory Seminar, High Energy Physics Division, Argonne National Laboratory  
Talk on " Topics in Heavy Quarkonium Phenomenology ".

**at DESY**

- Feb. 9, 2001 : HEP/Astro Seminar, Ohio State University, Columbus, Ohio,  
Invited Talk on " Polarization of heavy quarkonium at the Tevatron ".
- October 16-21, 2000 : 14th International Spin Physics Symposium (SPIN2000), Osaka University, Osaka, Japan,  
Invited Talk on " Effective Theory for Heavy Quarkonium Production ".
- October 27-28, 2000 : Conference of the Korean Phys. Soc., Pohang, Korea,  
Invited Talk on "Next-to-Leading Order Calculation of a Fragmentation in a Light-Cone Gauge".
- August 9-12, 2000 : The Meeting of The Division of Particles and Fields of The American Physical Society (DPF2000), Ohio State University, Columbus, Ohio, U.S.A.,  
Talked on "Charmonium Polarization at the Tevatron".
- August 9-12, 2000 : The Meeting of The Division of Particles and Fields of The American Physical Society (DPF2000), Ohio State University, Columbus, Ohio, U.S.A.,  
Talked on "Next-to-Leading Order Calculation of the Color-Octet  $^3S_1$  Gluon Fragmentation Function for Heavy Quarkonium".
- April 25-30, 2000 : 8th International Workshop on Deep-Inelastic Scattering (DIS2000), University of Liverpool, Liverpool, United Kingdom,  
Talked on "Current Issues in Quarkonium Production".
- April 17-19, 2000 : PHENO2000, University of Wisconsin, Madison, Wisconsin,  
Talked on "Quarkonium Polarization at the Tevatron".
- Feb. 24-26, 2000 : Workshop on B Physics at the Tevatron - Run II and Beyond, Fermi National Accelerator Laboratory, Batavia, Illinois, U.S.A.,  
Reported on "The calculations of the polarization of charmonium and bottomonium at the Tevatron" (talked by Eric Braaten).

- Jan. 25, 2000 : DESY Seminar, DESY Auditorium, Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany,  
Invited Talk on "Test of NRQCD Factorization in Charmonium Production at HERA".
- Jan. 2-8, 2000 : 5th QCD workshop on QCD, Villefrance-Sur-Mer, France,  
Talked on "Polarization of prompt  $J/\psi$  at the Tevatron".
- May 1999 : Ringberg Workshop: New Trends in HERA Physics 1999,  
Talked on "Color-octet contributions to inelastic heavy-quarkonium production".

### at Seoul National University

- June 10-14 1997 : VII Blois Workshop, Ewha Univ., Seoul, Korea,  
Talked on "Color-octet Mechanism in  $J/\psi$  Production"
- November 1996 : CTP Miniworkshop, KAIST, Taejeon, Korea.  
Talked on "Phenomenological studies on the NRQCD"
- August 1996 : First Asia Pasific Workshop and Conference on Strong Interactions, Academia Sinica, Taipei.  
Invited Lecturer on "The NRQCD effective theory".

Conference of Korean Physical Society (Ph. D. Student)

- October 1996 : Talked on "Color-octet heavy quarkonium productions in  $Z^0$  decays at LEP".
- October 1996 : Talked on " $\gamma + p \rightarrow J/\psi + X$ "  
Talked on "Color-octet contribution in the associated  $J/\psi + \gamma$  hadroproduction".
- April 1996 : Talked on "Inclusive S-wave charmonium productions in  $B$  decays"  
Talked on "Chiral perturbation theory vs vector meson dominance in the decay  $\phi \rightarrow \rho\gamma\gamma$  and  $\phi \rightarrow \omega\gamma\gamma$ ".
- October 1995 : Talked on "The simplest form of the  $\kappa$  and  $\kappa^2$  order graviton self interaction Lagrangian density in the weak field approximation".
- October 1994 : Talked on "Anomalous gauge-boson couplings in high energy  $ep$  collisions".

### Lecture :

- Jun. 16, 1999  
Universität Hamburg  
" Introduction to Reduce - A Symbolic Manipulation Package -"

- *Jun. 16, 1999*  
*Universität Hamburg*  
” Introduction to Pattern matching Method in Mathematica”
- *Mar. 15, 1998*  
*The Ohio State University*  
” Basic Symbolic Algebra by using Pattern Matching Technique in Mathematica ”

## LIST OF PUBLICATIONS

**Jungil LEE**

**in Journals :**

**at Argonne**

1. *Relativistic corrections to gluon fragmentation into  $J/\psi$  :*  
Geoffrey T. Bodwin and Jungil Lee,  
in preparation.  
This result is reported at DPF2002, Williamsburg, VA.
2.  *$e^+e^-$  Annihilation into  $J/\psi + J/\psi$ :*  
Geoffrey T. Bodwin, Jungil Lee, and Eric Braaten  
ANL-HEP-PR-02-110, hep-ph/0212181, submitted to Phys. Rev. Lett.
3. *Exclusive Double-Charmonium Production from  $e^+e^-$  Annihilation into Two Virtual Photons:*  
Geoffrey T. Bodwin, Jungil Lee, and Eric Braaten  
ANL-HEP-PR-02-105, hep-ph/0212352, accepted for publication in Phys. Rev. D.
4. *Exclusive Double-Charmonium Production from  $e^+e^-$  Annihilation into a Virtual Photon:*  
Eric Braaten and Jungil Lee,  
ANL-HEP-PR-02-094, hep-ph/0211085, Phys. Rev. D in press.
5. *Radiative decay of  $\Upsilon(nS)$  into S-wave sbottomonium :*  
Edmond L. Berger, Geoffrey T. Bodwin and Jungil Lee,  
Phys. Lett. B **552**, 223-228 (2003), hep-ph/0206115.
6. *Hadronic decays of  $\chi_{bJ}$  into light bottom squarks :*  
Edmond L. Berger and Jungil Lee, Phys. Rev. D **65**, 114003 (2002), hep-ph/0203092.

**at DESY**

7. *Fragmentation functions for lepton pairs :*  
Eric Braaten and Jungil Lee, Phys. Rev. D **65**, 034005 (2002), hep-ph/0102130.
8. *Polarization of  $\Upsilon(nS)$  at the Tevatron :*  
Eric Braaten and Jungil Lee, Phys. Rev.D **63**, 071501(R) (2001), hep-ph/0012244.
9. *Next-to-Leading Order Calculation of a Fragmentation Function in a Light-Cone Gauge :*  
Jungil Lee, DESY 00-092, hep-ph/0009111.
10. *Polarized  $J/\psi$  from  $\chi_{cJ}$  and  $\psi'$  decays at the Tevatron :*  
B. Kniehl and Jungil Lee, Phys. Rev. D **62**, 114027 (2000), hep-ph/0007292.

11. *Next-to-Leading Order Calculation of the Color-Octet  $^3S_1$  Gluon Fragmentation Function for Heavy Quarkonium :*  
E. Braaten and Jungil Lee, Nucl. Phys. B **586**, 427 (2000), hep-ph/0004228.
12. *Phenomenology of the Radion in Randall-Sundrum Scenario at Colliders :*  
Sae Byuk Bae, P. Ko, Hong Seok Lee and Jungil Lee, Phys. Lett. B **487**, 299 (2000), hep-ph/0002224.
13. *Polarization of prompt  $J/\psi$  at the Tevatron :*  
E. Braaten, B. Kniehl and Jungil Lee, Phys. Rev. D **62**, 094005 (2000), hep-ph/9911436.

**at Ohio State University**

14. *Associated production of  $\Upsilon$  and Weak gauge bosons at the Tevatron :*  
E. Braaten, Jungil Lee and S. Fleming, Phys. Rev. D **60**, 091501 (R) (1999), hep-ph/9812505.
15. *Testing  $J/\psi$  production mechanism in  $B$ -decays :*  
P. Ko, Jungil Lee and H. S. Song, J. Kor. Phys. Soc. **34**, 301 (1999).
16. *Polarized  $J/\psi$  production at CLEO :*  
S. Baek, P. Ko, Jungil Lee and H. S. Song, J. Kor. Phys. Soc. **33**, 97 (1998), hep-ph/9804455.

**at Seoul National University**

17. *Four-quark operators relevant to  $B$ -meson life times from QCD sum rules :*  
M. S. Baek, Jungil Lee, C. Liu and H. S. Song, Phys. Rev. D **57**, 4091 (1998), hep-ph/9709386.
18. *Color-octet mechanism in the inclusive  $D$ -wave charmonium productions in  $B$  decays :*  
P. Ko, Jungil Lee and H. S. Song, Phys. Lett. B **395**, 107 (1997), hep-ph/9701235.
19. *Color-octet mechanism and  $J/\psi$  polarization at LEP :*  
S. Baek, P. Ko, Jungil Lee and H. S. Song, Phys. Rev. D **55**, 6839 (1997), hep-ph/9701208.
20. *Color-octet contribution in the associated  $J/\psi + \gamma$  hadroproduction :*  
C. S. Kim, Jungil Lee and H. S. Song, Phys. Rev. D **55**, 5429 (1997), hep-ph/9610294.
21. *Color-octet heavy quarkonium productions in  $Z^0$  decays at LEP :*  
S. Baek, P. Ko, Jungil Lee and H. S. Song, Phys. Lett. B **389**, 609 (1996), hep-ph/9607236.
22. *Color-octet mechanism in  $\gamma + p \rightarrow J/\psi + X$  :*  
P. Ko, Jungil Lee and H. S. Song, Phys. Rev. D **54**, 4312 (1996); **60**, 119902(E) (1999), hep-ph/9602223.
23. *Inclusive  $S$ -wave charmonium productions in  $B$  decays :*  
P. Ko, Jungil Lee and H. S. Song, Phys. Rev. D **53**, 1409 (1996), hep-ph/9510202.

24. *Chiral perturbation theory versus vector meson dominance in the decay  $\phi \rightarrow \rho\gamma\gamma$  and  $\phi \rightarrow \omega\gamma\gamma$ :*  
 P. Ko, Jungil Lee and H. S. Song, Phys. Lett. B **366**, 287 (1996), hep-ph/9510205.
25. *Anomalous gauge-boson couplings in high energy ep collisions :*  
 C. S. Kim, Jungil Lee and H. S. Song, Z. Phys. C **63**, 673 (1994), hep-ph/9307377.
26. *Polarization of weak bosons at electron-positron colliders :*  
 I. Choi, S. Y. Choi, Jungil Lee, T. Lee, J. Kim, H. S. Song, J. Kor. Phys. Soc. **27**, 134 (1994).
27. *Lowest-order graviton interactions with a charged fermion and a photon :*  
 S. Y. Choi, Jungil Lee, J. S. Shim and H. S. Song, Phys. Rev. D**48**, 769 (1993).
28. *Polarization effects in spin- $\frac{3}{2}$  hyperon decay :*  
 Jewan Kim, Jungil Lee, J. S. Shim and H. S. Song, Phys. Rev. D **46**, 1060 (1992).
29. *Spin-2 particle polarization :*  
 S. Y. Choi, Jungil Lee, J. S. Shim and H. S. Song, J. Kor. Phys. Soc. **25**, 576 (1992).

**in Proceedings :**

### **at Argonne**

30. *Polarization of Prompt  $J/\psi$  and  $\Upsilon(nS)$  :*  
 Proceedings of X International Workshop on Deep-Inelastic Scattering (DIS2002), April 30-May 4, 2002, Cracow, Acta Physica Polonica B, **33**, 3237-3241 (2002).
31. *B PHYSICS AT THE TEVATRON: RUN II AND BEYOND :*  
 K. Anikeev, *et al.*, FERMILAB-PUB-01-197, Workshop on B Physics at the Tevatron: Run II and Beyond, Batavia, Illinois, 24-26 Feb 2000, and Workshop on B Physics at the Tevatron: Run II and Beyond, Batavia, Illinois, 23-25 Sep 1999, hep-ph/0201071.  
 I am a coauthor of Chap. 9 of this report.
32. *PARTICLE PHYSICS EXPERIMENTS AT JLC :*  
 Koh Abe *et al.*, ACFA Linear Collider Working Group, KEK-REPORT-2001-11, Sep 2001. 457pp, hep-ph/0109166.

### **at DESY**

33. *Radion phenomenology in the Randall-Sundrum scenario :*  
 S. Bae, P. Ko, H.S. Lee and Jungil Lee, DESY 01-033, hep-ph/0103187, in Proceedings of COSMO-2000, Cheju Island, Korea, Sep. 4-8, 2000, World Scientific.
34. *Effective Theory for Heavy Quarkonium Production :*  
 Proceedings of the 14th International Spin Physics Symposium (SPIN2000), October 16-21, 2000, Osaka, American Institute of Physics (AIP).

35. *Charmonium Polarization at the Tevatron :*  
Proceedings of The Meeting of the Division of Particles and Fields of the American Physical Society (DPF2000), August 9-12, 2000, Columbus, to be published in a proceedings supplement in the Int. J. Mod. Phys. A.
36. *Next-to-Leading Order Calculation of the Color-Octet  $^3S_1$  Gluon Fragmentation Function for Heavy Quarkonium :*  
Proceedings of The Meeting of the Division of Particles and Fields of the American Physical Society (DPF2000), August 9-12, 2000, Columbus, to be published in a proceedings supplement in the Int. J. Mod. Phys. A.
37. *Current Issues in Quarkonium Production :*  
Proceedings of the 8th International Workshop on Deep-Inelastic Scattering (DIS2000), April 25-30, 2000, World Scientific.
38. *Polarization of prompt  $J/\psi$  at the Tevatron :*  
Proceedings of the 5th Workshop on Quantum Chromodynamics (QCD2000), January 3-7, 2000, Villefranche-sur-Mer, France, World Scientific.
39. *Color-octet contributions to inelastic heavy-quarkonium production :*  
Lecture Notes in Physics Proceedings, Ringberg Workshop: New Trends in HERA Physics 1999, May 30-June 4, 1999, edited by G. Grindhammer, B. A. Kniehl, G. Kramer, Springer Verlag, Heidelberg.

**at Seoul National University**

40. *Color-octet Mechanism in  $J/\psi$  Production :*  
Proceedings of VII Blois Workshop, June 10-14 1997, Ewha Univ., Seoul, Korea, edited by K. Kang, World Scientific, Singapore.
41. *Investigation of  $WW\gamma$  coupling :*  
The Korea-Japan Joint Symposium 94, Dec. 13-15, 1994, Seoul, Korea, edited by I. T. Cheon, World Scientific, Singapore.
42. *Probing  $WW\gamma$  couplings from  $\sigma(W)/\sigma(Z)$  in the high energy  $ep$  collisions :*  
International workshop on future  $e^+e^-$  colliders at Waikoloa, Hawaii in April 1993.